

Evolent Clinical Guideline ~~057-3~~2065 for Upper Extremity Magnetic Resonance Imaging (MRI)

Arm, Carpal Joint, Elbow, Hand, Humerus, Scapula, Shoulder, Upper Extremity Joint, Upper Extremity Non-Joint, Wrist

Guideline or Policy Number:	<u>Applicable Codes</u>			
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STATEMENT

General Information

- *It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.*
- *Where a specific clinical indication is not directly addressed in this guideline, medical necessity determination will be made based on widely accepted standard of care criteria. These criteria are supported by evidence-based or peer-reviewed sources such as medical literature, societal guidelines and state/national recommendations.*
- *The guideline criteria in the following sections were developed utilizing evidence-based and peer-reviewed resources from medical publications and societal organization guidelines as well as from widely accepted standard of care, best practice recommendations.*

Purpose

Magnetic resonance imaging ([MRI](#)) shows the soft tissues and bones. With its multiplanar capabilities, high contrast, and high spatial resolution, it is an accurate diagnostic tool for conditions affecting the joint and adjacent structures.

Special Notes

- Plain [radiographs-X-rays](#) must precede MRI evaluation unless otherwise indicated
- Some indications are for MRI, [Computed Tomography \(CT\)](#), or MR or CT Arthrogram (more than one should not be approved at the same time)
- If an MR Arthrogram fits approvable criteria below, approve as MRI

INDICATIONS FOR UPPER EXTREMITY MRI (SHOULDER, ELBOW, OR WRIST)

Joint or MuscleUpper Extremity Pain (1,2)(4,2)

NOTE: Prior completed X-ray showing no clear etiology of joint/extremity pain must precede upper extremity MRI evaluation unless otherwise indicated

Non-specific Upper Extremity Pain

Upper extremity pain with no specific joint identified with prior X-ray showing no clear etiology of joint/extremity pain with any **ONE** of the following:

- Persistent joint or musculotendinous upper extremity pain unresponsive to **ACTIVE Conservative Therapy** **Conservative Therapy (ACT)** which includes physical therapy, chiropractic treatments, and/or physician supervised **Home Exercise Program** **(HEP)** **Home Exercise Program (HEP)** of at least four (4) weeks duration within the last 6 months
- With progression or worsening of symptoms during the course of active conservative treatment
- Pediatric patient that is either under the age of 12 years **OR** cannot comply with the prescribed therapy

Negative Findings on Orthopedic Exam and after X-Ray Completed

Joint Specific Pain or Suspected Joint Specific Injury **NOTE:** Does not apply to young children (up to age 12)

In the absence of a positive joint specific orthopedic sign on exam (see list below), advanced imaging is indicated with prior X-ray showing no clear etiology for the joint pain with any **ONE** of the following:

- Persistent joint pain unresponsive to **ACTIVE Conservative Therapy* (ACT)** which includes physical therapy, chiropractic treatments, and/or physician supervised **Home Exercise Program (HEP)** **Home Exercise Program (HEP)** of at least four (4) weeks duration within the last 6 months
- With progression or worsening of symptoms during the course of active conservative treatment
- Pediatric patient that is either under the age of 12 years **OR** cannot comply with the prescribed therapy
- With progression or worsening of symptoms during the course of conservative treatment

Joint Specific Orthopedic Signs

Provocative Exam Tests and Suspected Injuries

NOTE: With a positive orthopedic sign from the list below, an initial X-ray is always preferred; however, it is **NOT** required UNLESS otherwise specified in **bold** below.

NOTE: The joint specific exam testing list below is intended to be thorough but cannot possibly be all inclusive. Advanced imaging is indicated for any orthopedic exam test that clearly suggests joint instability

Joint specific advanced imaging is indicated for any positive orthopedic sign listed below:

Approvable Orthopedic Test

~~to approve advanced imaging. A positive sign is weakness or pain. In addition, any test that suggests joint instability requires further imaging (the below list is not all inclusive)~~

Shoulder (3)(3)

- Physical exam demonstrating a positive result for any **ONE** of the following tests:

<u>Suspected Injury</u>	<u>Test Name</u>	<u>Description</u>
Subscapularis tendon ⁽⁴⁾	Bear hug test	<u>Patient cannot place hand on opposite shoulder or weakness in resisted internal rotation</u>
	Belly press test (Napolean Test)	<u>Patient unable press palm into belly without compensation from wrist flexion</u>
	Internal rotation lag	<u>Inability to maintain hand in a behind the back position in a full internal rotation position</u>
	Lift-off test	<u>Pain/Inability to lift hand off of lower back</u>
Supraspinatus tendon ^(5,6)	Drop arm <u>test</u>	<u>Inability to avoid drop of arm when released from shoulder level (90-degree) abduction</u>
	Empty can <u>test</u> (Jobe or supraspinatus test)	<u>Pain/weakness with resistance when in emptying can position (arm 90-degree abducted, thumb down)</u>
	Full can test	<u>Pain/weakness with resistance when in full can position (arm 90-degree abducted, thumb up)</u>

<u>Suspected Injury</u>	<u>Test Name</u>	<u>Description</u>
	<u>Hawkins Test (ONLY for evaluation of suspected rotator cuff tear and NOT for impingement)</u>	<u>Pain with passive internal rotation of shoulder with arm in 90-degree flexion and elbow and hand in below the head position</u>
	<u>Neer Test (ONLY for evaluation of suspected rotator cuff tear and NOT for impingement)</u>	<u>Pain with passive internal rotation of shoulder and full elbow extension, arm is flexed to overhead position</u>
Infraspinatus / Teres Minor / Biceps tendon ⁽⁷⁾	External rotation lag sign at 0 and 90 degrees	<u>Patient cannot maintain external rotation position and arm lags into internal rotation</u>
	Hornblower test	<u>Inability to maintain external rotation position (hand towards mouth – horn blower position) against resistance</u>
	Resisted external rotation testing	<u>Pain/weakness during resisted shoulder external rotation</u>
	<u>Biceps Popeye sign</u> (if acute finding and/or for evaluation of surgical correction)	<u>Visible bulge in lower arm (near elbow) resembling the cartoon character Popeye's muscular arms</u>
Labral tear/shoulder instability ⁽⁸⁾	Anterior load and shift <u>Test</u>	<u>Shoulder laxity with axial load and anterior shift of the humeral head across a stabilized scapula</u>
	Apprehension Test	<u>Positioning the patient with their arm abducted to 90 degrees and then externally rotating the arm while observing for signs of apprehension or discomfort.</u>
	Clunk test	<u>Clunk/grinding while externally rotating the arm and pushing anteriorly on the humeral head</u>
	<u>Crank test</u> (Compression-rotation test, <u>Apprehension test</u> , <u>Apley Grind test</u>)	<u>Pain/click with axial compression load on the humerus with internal and external rotation of the arm</u>

<u>Suspected Injury</u>	<u>Test Name</u>	<u>Description</u>
	Jerk Test	<u>Click with axial load on the humerus and the arm moved horizontally in 90 degrees abduction and internal rotation</u>
	O'Brien's test	<u>Pain/click with upward force while in position of pronation of the elbow and full shoulder rotation versus no pain/click while in position of supination of the elbow</u>
	Posterior load and shift test	<u>Shoulder laxity with axial load and posterior shift of the humeral head across a stabilized scapula</u>
	Sulcus sign (<u>Multidirectional instability</u>)	<u>Visible depression/groove (sulcus) between the acromion and the humeral head with downward traction on the arm</u>
Rotator Cuff	Weakness	<u>Weakness specifically of the rotator cuff (no particular 1-5 strength exam score required)</u>

on exam

- o ~~(only when ordered by an orthopedic surgeon if there is clear documentation in the records that an actual rotator cuff tear is suspected, and NOT just for the evaluation of impingement)~~
- o Jerk Test
- o Sulcus sign

Elbow ⁽⁹⁾⁽¹⁰⁾

- Physical exam demonstrating a positive result for any ONE of the following tests:

<u>Suspected Injury</u>	<u>Test Name</u>	<u>Description</u>
<u>Biceps tendon</u> ⁽¹⁰⁾	Biceps squeeze test	<u>Lack of forearm supination with squeeze of the biceps muscle</u>
	Bicipital aponeurosis (BA) flex test	<u>Direct palpation of a defect in the bicipital aponeurosis with arm in flexion</u>

<u>Suspected Injury</u>	<u>Test Name</u>	<u>Description</u>
	Hook test	Inability to “hook” the distal biceps tendon with resisted forearm supination
	Passive forearm pronation test (<u>supination-pronation test</u>)	Absence of the normal proximal-to-distal movement of the biceps muscle belly during passive pronation and supination of the forearm
	<u>Reverse Popeye sign (if acute finding OR for possible surgical correction)</u>	Visible bulge in upper arm (near shoulder) resembling the cartoon character Popeye’s muscular arms
<u>Elbow joint instability</u> ⁽¹¹⁾	Milking maneuver	Pain/elbow instability with lateral pull on the thumb (like a cow udder) with the arm in a flexed supinated position
	Posterolateral rotatory drawer test	Laxity with anterior to posterior force to radial and ulna with the forearm in external rotation
	Push-up test	Pain/click while patient pushes up out of a chair from a sitting position
	Tabletop relocation test	Pain/click while pushing up from a tabletop position with elbows pointing laterally
	Valgus stress	Pain/laxity with medially directed (valgus) stress pressure with upper arm stabilized
	Varus stress	Pain/laxity with laterally directed (varus) stress pressure with upper arm stabilized

Wrist ^{(12–14)(12,13,14,15)}

- Physical exam demonstrating a positive result for any **ONE** of the following tests:

<u>Suspected Injury</u>	<u>Test Name</u>	<u>Description</u>
Lunotriquetral (LT) ligament tear	Derby relocation test	Reduced pain with stabilization of LT and moving wrist in dart-throwing motion
	Reagan test (lunotriquetral ballottement test, shuck test)	Pain/click/laxity while stabilizing the triquetrum and applying volar/dorsal force to the lunate.
Triangular Fibrocartilage Complex (TFCC)	Press Test	Pain while pushing up out of a seated position from a chair with armrests with the wrist in extension
	Ulnar fovea sign/test	Pain with deep palpation in the space between ulnar styloid process and flexor carpi ulnaris
	Ulnocarpal stress test (Sharpey's Test)	Pain with axial load on the wrist in maximum ulnar deviation while supinating and pronating wrist
Scaphoid ligament	Scapholunate ballottement test	Pain/click/laxity with volar/dorsal displacement of scaphoid while stabilizing the lunate
	Watson test (scaphoid shift test)	Pain/click with dorsally directed pressure on the scaphoid while wrist moved from ulnar to radial deviation

After X-Ray and/ or ultrasound not listed above

Shoulder Dislocations (15–18)(15,16,17,18,19)

- Recurrent shoulder dislocation
- First dislocation time with in any ONE of the situations below that increase the risk of repeated shoulder dislocation:
 - Anterior glenoid bone loss or humeral head (Hill-Sachs lesion) bone loss (Hill-Sachs lesion) on prior X-ray
 - Bony Bankart lesion (fracture of the glenoid rim that occurs with a tear in the anterior labrum) on radiographs prior X-ray
 - 14 - 40 years old

- > 40 years old with exam findings concerning for rotator cuff tear (sSuch as i.e., weakness on shoulder exam)

Suspected Upper Extremity Tendon or Muscle Rupture

High clinical suspicion of a specific tendon rupture with ALL of the following:

- After X-ray completed
- Mechanism of injury (sSuch as excess muscle/tendon load, direct blow, high speed impact event) and/or physical findings (sSuch as palpable defect in the triceps, pectoralis tendon rupture on exam) consistent with a possible tendon rupture

Bone Upper Extremity Trauma

Suspected Bone Fracture or Ligament Injury⁽¹⁹⁾⁽²⁰⁾

- Suspected occult scaphoid fracture
 - with Snuffbox pain after initial X-ray
- Suspected non scaphoid suspected occult, stress or insufficiency fracture with ALL of the following:
 - With a negative initial X-ray
 - X-rays, taken 10-14 days or more after the injury or initial clinical assessment are negative or indeterminate
- Repeat x-rays in 10-14 days if negative or non-diagnostic Suspected pathologic fracture on prior X-ray or CT
- Concern for impending fracture on prior X-ray or CT
- Suspected nonunion or delayed union as demonstrated by a lack of bone healing on two or more sets of X-rays 4 to 8 months or more apart⁽²⁰⁾
- Pathologic fracture on x-ray or CT

Known Bone Fracture

- Known traumatic fractures on prior imaging with suspected associated ligament or tendon injury Suspected ligamentous/tendon injury with known fractures on x-ray/CT that may require surgery

Osteochondral Lesions (21,22)(21,22)

Defects, Fractures, Osteochondritis Dissecans

- Clinical suspicion based with completed prior X-ray that is indeterminate or abnormal and any **ONE** of the following:
 - Suspicious mechanism of injury (~~s~~Such as prior twisting type joint injury, repeated joint microtrauma)
 - Suspicious physical findings (~~s~~Such as focal pain, decreased range of motion, or joint clicking/catching).

Fracture Nonunion (21,20)

Nonunion or delayed union as demonstrated by no healing between two sets of x-rays. If a fracture has not healed by 4-6 months, there is delayed union. Incomplete healing by 6-8 months is nonunion. CT is the preferred study.

~~In the setting of joint pain or mechanical symptoms~~

~~NOTE: X-ray completed~~

~~After X-Ray or Ultrasound Completed~~

~~In the setting of joint pain or mechanical symptoms~~

Joint Prosthesis / Replacement (23,24)(26,25)

- Suspected joint prosthesis loosening, infection, or dysfunction, after initial ~~X~~-rays
- Suspected metallosis (increased serum levels of metal ions) with painful metal on metal hip replacement ^{(25,26)(28)} after initial ~~X~~-rays completed and any **ONE** of the following:
 - Significantly elevated Cobalt levels (normal level is less than 1.7 micrograms/liter (ppb)) ⁽²⁷⁾
 - Significantly elevated Chromium levels (normal level for patients with metallic implants is less than 2.0 micrograms/liter (ppb)) ⁽²⁷⁾⁽²⁹⁾
 - Indeterminate or abnormal joint aspiration (~~s~~Such as findings of metallic debris and absence of infection)

Upper Extremity Vascular Malformation (VM) (28)27

- Vascular malformations of the upper extremity with any ONE of the following:
 - After initial evaluation with ultrasound and advanced imaging results will change management
 - Indeterminate or abnormal prior ultrasound
 - Preoperative planning
 - Follow up after prior surgical treatment and/or embolization

NOTE: MRA of the upper extremity is also indicated with any of the above conditions

Extremity Mass ^(27,26)

- Mass or lesion after non-diagnostic x-ray or ultrasound, CT is better than MRI to evaluate mass calcification or bone involvement and may complement or replace MRI
 - Superficial superficial mass, then ultrasound is the initial study
 - Deep deep mass, then x-ray is the initial study

Inconclusive

MRA is also approvable

Evaluation of Tumor

When needed for clarification of vascular invasion from tumor after prior imaging.

Suspected metastatic disease with signs/symptoms and after initial imaging with radiographs

Known Primary Cancer of the Extremity Malignancy

(28,29,30,31,32)

- Initial staging primary extremity tumor
- Follow-up of known primary cancer of patient undergoing active treatment within the past year or as per surveillance imaging guidance for that cancer
- Signs or symptoms or imaging findings suspicious for recurrence
- Suspected metastatic disease with signs/symptoms and after initial imaging with radiographs

Loose Bodies or Synovial Chondromatosis ⁽²⁹⁾⁽²³⁾

- To evaluate joint pain or mechanical symptoms suspected to be the results of loose

bodies and/or chondromatosis (rare, benign condition where multiple cartilaginous nodules form within the synovial lining of a joint) after prior indeterminate or abnormal imaging (X-ray and /or ultrasound)

Osteonecrosis⁽³⁰⁾⁽²⁴⁾

- To further characterize a prior abnormal X-ray or CT suggesting osteonecrosis
- Symptomatic and high-risk patients (such as glucocorticosteroid use, renal transplant, glycogen storage disease, alcohol abuse, sickle cell anemia) with normal or indeterminate prior X-ray
- Known osteonecrosis (such as avascular necrosis) to evaluate the contralateral joint after initial X-rays are abnormal or indeterminate

Infection / Inflammation

Infection of Bone, Joint, or Soft Tissue Abscess^{(31)(33,32)}

- Clinical suspicion of infection of the upper extremity with abnormal or indeterminate prior X-ray or ultrasound
- Negative prior X-ray or ultrasound but with a clinical suspicion of advanced infection based on any ONE of the following:
 - Signs and symptoms of joint or bone infection such as:
 - Pain and swelling
 - Decreased range of motion
 - Fevers
 - Laboratory findings consistent with possible bone or joint infection such as:
 - Elevated ESR or CRP
 - Elevated white blood cell count
 - Positive joint aspiration
- Upper extremity ulcer (such as diabetic, pressure, ischemic, or traumatic ulcer) with suspected advanced infection with ALL of the following⁽³²⁾:
 - Signs of advanced infection on exam (such as redness, warmth, swelling, exposed bone, bone is encountered when probing the wound, worsening breakdown, worsening smell)
 - No improvement despite prior treatment and bone or deep soft tissue infection is now suspected
- either of the following:

- ~~of infection include any of the following:~~
- ~~signs of infection (redness, warmth, swelling, pain, discharge which may range from white to serosanguineous) that is not improving~~^(34,33)
- ~~Increased suspicion if size or temperature increases, bone is exposed/positive probe-to-bone test, new areas of breakdown, new smell~~

Evaluation of Inflammatory (Autoimmune) Joint Disease^(33,34) Known or Suspected Autoimmune Disease^(34,35)

- For suspected inflammatory joint disease (~~s~~Such as rheumatoid arthritis, psoriatic arthritis) with any **ONE** of the following:
 - Prior indeterminate or abnormal imaging
 - Prior normal imaging but with lab test results (~~s~~Such as RF, CRP, ANA, ESR) that suggest autoimmune disease
- For known inflammatory joint disease (~~s~~Such as rheumatoid arthritis, psoriatic arthritis) with any **ONE** of the following:
 - Recent indeterminate imaging
 - To assess the response to ongoing active medical therapy where prior imaging and/or labs are currently insufficient or have been insufficient in the past
 - To help determine the need to change ongoing active medical therapy based on new/worsening signs or symptoms (such as joint swelling, tenderness, effusion, erythema, warmth, restricted motion, prolonged morning stiffness)

Inflammatory Myopathies^{(35,36)(43)}

- For suspected inflammatory myopathy (~~s~~Such as polymyositis, dermatomyositis, immune-mediated necrotizing myopathy, inclusion body myositis) with any **ONE** of the following:
 - Clinical suspicion based on presenting symptoms (such as symmetric extremity weakness)
 - Clinical suspicion based on lab testing (such as muscle enzyme testing)
 - Clinical suspicion based on prior electromyogram (EMG) results
 - For biopsy planning
- For known inflammatory myopathy (~~s~~Such as polymyositis, dermatomyositis, immune-mediated necrotizing myopathy, inclusion body myositis) with any **ONE** of the following:
 - Prior indeterminate imaging
 - To assess the response to ongoing active medical therapy where prior imaging and/or labs are or have been insufficient

- To help determine the need to continue or change ongoing active medical therapy where prior imaging and/or labs are or have been insufficient

~~Further evaluation of an abnormality or non-diagnostic findings on prior imaging~~

- ~~Initial imaging of a single joint for diagnosis or response to therapy after plain films and appropriate lab tests (e.g., RF, ANA, CRP, ESR)~~
- ~~Follow-up to determine treatment efficacy in the following:~~
 - ~~Early rheumatoid arthritis~~
 - ~~Advanced rheumatoid arthritis if x-ray and ultrasound are equivocal or non-contributory~~
- ~~Known or suspected inflammatory myopathies (such as polymyositis, dermatomyositis, immune-mediated necrotizing myopathy, inclusion body myositis)~~
 - ~~For diagnosis~~
 - ~~For biopsy planning~~

e.g., **Rheumatoid Arthritis**

Foreign Body (37) (37,36)

- For known or suspected foreign body of the ~~upper lower~~ extremity with prior imaging that is indeterminate or abnormal

Indeterminate x-ray and ultrasound

Peripheral Nerve Entrapment (38,39)(37,38,39)

- For suspected peripheral nerve entrapment (such as carpal tunnel) with any **ONE** of the following:
 - Abnormal electromyogram or nerve conduction study
 - Abnormal X-ray or ultrasound
 - Failed prior 4-week **inactive** conservative treatment including at least **two** of the following (active treatment with physical therapy is **NOT** required):
 - Activity modification
 - Rest, ice, and/or heat
 - Splinting or orthotics
 - Pharmacotherapy (such as NSAIDs, steroids)

Brachial Plexopathy (40–42)

Medication

NOTE: e.g.,

- **Traumatic** Brachial Plexopathy:

- If mechanism of injury is highly suspicious for brachial plexopathy (such as birth trauma, mid-clavicular fracture, shoulder dislocation, contact injury to the neck (burner or stinger syndrome) or penetrating injury)⁽⁴²⁾⁽⁴³⁾⁽⁴⁴⁾

- **Non-traumatic** Brachial Plexopathy:

- When Electromyography/Nerve Conduction Velocity (EMG/NCV) studies are suggestive of brachial plexopathy

NOTE: Either Neck MRI, Shoulder MRI or Chest MRI may be appropriate depending on the location of the injury/plexopathy. Only **ONE** of these three studies should be needed to appropriately image the brachial plexus is indicated.

Pediatric Specific Indications (Up to Age 18)

- Suspected Chronic Recurrent Multifocal Osteomyelitis after completion of initial X-ray imaging and laboratory evaluation (such as CRP, ESR) Chronic Recurrent Multifocal Osteomyelitis after initial work-up (labs (i.e. CRP/ESR and x-ray))^(44,45)^(42,43)
 - NOTE: Whole body bone marrow MRI (See Evolent CG 2007 for Bone Marrow MRI) is preferred when imaging of multiple joints is requested
- Osteoid Osteoma – when upper extremity CT (the preferred study) is insufficient or not available⁽⁴⁶⁾

Suspected Malignancy

- Suspected malignancy with prior imaging that is abnormal or indeterminate

Known Malignancy (47,48)

Initial Staging

- For initial staging of a primary extremity tumor

Restaging

- Monitoring of a primary extremity tumor on treatment
- End of treatment evaluation of a primary extremity tumor
- Prior to surgery of a primary extremity tumor

Surveillance

- Follow-up of known primary cancer of extremity
 - Every 3-6 months for 2-3 years, then every 6-12 months until 5 years then annually
- Signs or symptoms or imaging findings suspicious for recurrence
- Suspected metastatic disease with signs/symptoms and after initial imaging with X-ray or ultrasound

~~Whole body Bone Marrow MRI is more appropriate when multiple joints requested see Evolent CG_0592007 Bone Marrow MRI~~

PRE-~~O~~OPERATIVE OR POSTOPERATIVE ASSESSMENT /PROCEDURAL EVALUATION

When not otherwise specified in the guideline

Pre-operative ~~E~~valuation: ~~for a planned surgery or procedure~~

- Imaging of the area requested is needed to develop a surgical plan

~~Post-~~O~~operative/Procedural Evaluation:~~

- When imaging, physical examination, or laboratory findings indicate joint infection, delayed or non-healing or other surgical/procedural complications. Known or suspected complications
- A clinical reason is provided how imaging may change management

NOTE: This section applies only within the first few months following surgery

FURTHER EVALUATION OF INDETERMINATE FINDINGS ~~ON PRIOR IMAGING~~

Unless follow-up is otherwise specified within the guideline

- For initial evaluation of an inconclusive finding on a prior imaging report that requires further clarification
- One follow-up exam of a prior indeterminate MR/CT finding to ensure no suspicious interval change has occurred. (No further surveillance unless specified as highly suspicious or change was found on last follow-up exam).

CODING AND STANDARDS

Codes ing

CPT Codes

73218, 73219, 73220, 73221, 73222, 73223, +0698T

Applicable Lines of Business

<input checked="" type="checkbox"/>	CHIP (Children's Health Insurance Program)
<input checked="" type="checkbox"/>	Commercial
<input checked="" type="checkbox"/>	Exchange/Marketplace
<input checked="" type="checkbox"/>	Medicaid
<input checked="" type="checkbox"/>	Medicare Advantage

BACKGROUND

Conservative Therapy

Conservative therapy should include a multimodality approach consisting of a combination of active and inactive components. Completion of at least one active modality for 4 weeks in the past 6 months is required:

Active Modalities

- Physical therapy
- Physician-supervised Home Exercise Program (HEP)
(HEP) (See Below)
- Chiropractic care

Inactive Modalities

- Medications (e.g., NSAIDs, steroids, analgesics)
- Injections
- Medical Devices (e.g., TENS unit, bracing)

Home Exercise Program (HEP)

The following two elements are required for HEP to meet the criteria guidelines for completion of a trial of active conservative therapy (ACT):

- Information provided on exercise prescription/plan **AND**
- Follow-up with patient regarding completion of HEP over at least a 4-week period OR documented inability to complete HEP due to increased pain with inability to physically perform the prescribed exercises.
- ~~member with information provided (after suitable), or physical reason i.e., increased pain, inability to physically perform exercises.~~

NOTE: Patient inconvenience or noncompliance without explanation does not meet the “inability to complete HEP” criterium constitute

Contraindication and Preferred Studies

- Contraindications and reasons why a CT/CTA cannot be performed may include: impaired renal function, significant allergy to IV contrast, pregnancy (depending on trimester)
- Contraindications and reasons why an MRI/MRA cannot be performed may include: impaired renal function, claustrophobia, non-MRI compatible devices (such as non-compatible defibrillator or pacemaker), metallic fragments in a high-risk location, patient exceeds weight limit/dimensions of MRI machine

SUMMARY OF ANALYSIS

EULAR recommendations for the use of imaging of the joints in the clinical management of rheumatoid arthritis ⁽³⁴⁾

Study Design: This study involved a systematic review and consensus process by an expert group of rheumatologists, radiologists, methodologists, and experienced rheumatology practitioners from 13 countries. They generated 13 key questions on the role of imaging in rheumatoid arthritis (RA) and systematically searched research evidence to develop 10 recommendations

Target Population: Adults (≥ 18 years of age) with a clinical diagnosis of RA

Key Factors:

- Imaging modalities included conventional radiography, ultrasound, MRI, CT, dual-emission x-ray absorptiometry, digital x-ray radiogrammetry, scintigraphy, and positron emission tomography.
- The study identified 6888 references, from which 199 studies were included in the systematic review.
- Recommendations covered the role of imaging in diagnosing RA, detecting inflammation and damage, predicting outcome and response to treatment, monitoring disease activity,

progression, and remission.

ACR Appropriateness Criteria Stress (Fatigue-Insufficiency) Fracture Including Sacrum Excluding Other Vertebrae: 2024 Update⁽¹⁹⁾

Study Design: This study is an update of the American College of Radiology Appropriateness Criteria for stress fractures, including both fatigue and insufficiency types. It involved a systematic analysis of the medical literature from peer-reviewed journals and expert panel reviews.

Target Population: Patients with suspected stress fractures, including athletes, older patients, and patients with predisposing conditions.

Key Factors:

- Radiography is the imaging modality of choice for baseline diagnosis.
- MRI is preferred for diagnosing radiographically occult stress fractures.
- Nuclear medicine scintigraphy and CT may also be useful diagnostic tools.
- The study emphasizes the importance of prompt therapeutic measures to prevent progression to complete fractures.

Clinical Orthopedic Examination Findings in the Upper Extremity: Correlation with Imaging Studies and Diagnostic Efficacy⁽¹³⁾

Study Design: This study reviewed the diagnostic efficacy of various orthopedic tests for evaluating internal derangements of joints in the upper extremity. It correlated clinical test results with imaging findings, particularly MR imaging.

Target Population: Patients with suspected internal derangements of joints in the upper extremity.

Key Factors: The study presented an algorithmic approach to clinical tests for each joint, starting with general observation and range of motion, followed by specific tests tailored to evaluate individual or grouped anatomic structures. It emphasized the importance of understanding clinical jargon and the proper use of orthopedic tests to aid in the interpretation of radiologic images and enhance communication with orthopedists.

ANALYSIS OF EVIDENCE

Shared Findings ^(13,19,34) :

- **Imaging Modalities:** All three studies highlight the importance of various imaging modalities such as MRI, CT, and radiography in diagnosing and managing musculoskeletal conditions. They emphasize the role of imaging in providing detailed insights that complement clinical examinations.
- **Clinical Correlation:** The studies underscore the necessity of correlating imaging findings with clinical assessments to ensure accurate diagnoses and effective treatment.

plans.

- **Recommendations:** Each study provides specific recommendations or guidelines for the use of imaging in different clinical scenarios, emphasizing evidence-based practices and expert consensus.

Conclusion (13,19,34)

In summary, while all three studies emphasize the critical role of imaging in diagnosing and managing musculoskeletal conditions, they differ in their focus areas, target populations, and specific imaging recommendations. These differences highlight the diverse applications of imaging in various clinical scenarios and the importance of tailored approaches to imaging based on the specific condition being addressed

POLICY HISTORY

Date	Summary
<u>June 2025</u>	<ul style="list-style-type: none"> ● <u>G</u><u>This guideline number changed from replaces Evolent Clinical Guideline 057-3 for Upper Extremity MRI to 2065</u> ● <u>Guideline name changed from Upper Extremity MRI to Upper Extremity Magnetic Resonance Imaging (MRI)</u> <ul style="list-style-type: none"> ○ <u>Added a subtitle: Arm, Carpal Joint, Elbow, Hand, Humerus, Scapula, Shoulder, Upper Extremity Joint, Upper Extremity Non-Joint, Wrist</u> ● <u>Added in general information statement regarding guideline criteria development by reputable sources, standard of care, and best practices</u> ● <u>Tables of orthopedic signs added</u> ● <u>Metallosis, Inflammatory arthritis, pediatric, metastatic disease indications clarified and updated</u> ● <u>Updated Malignancy section</u> ● <u>Standardized pre/post-operative language</u> ● <u>Edited text for clarity</u> ● <u>Adjusted applicable lines of business – Medicare Advantage checked</u> ● <u>Background edited</u> ● <u>Added a Summary of Evidence and Analysis of Evidence</u> ● <u>References updated and expanded</u>
<u>May 2024</u>	<ul style="list-style-type: none"> ● Contraindications and preferred studies section added to the

Date	Summary
	<p>background</p> <ul style="list-style-type: none"> Background and references updated
May 2023	<ul style="list-style-type: none"> Updated: Orthopedic signs References Added: Indeterminate findings on prior imaging and follow-up surveillance Vascular malformations Known AVN to evaluate contralateral side Statement regarding clinical indications not addressed in the guideline Popeye sign, reverse Popeye sign Modified: Background sections CRMO Removed: Additional Resources

LEGAL AND COMPLIANCE

Guideline Approval

Committee

Reviewed / Approved by Evolent Specialty Services Clinical Guideline Review Committee

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